

Exchange Market Pressure in Indonesia: Domestic vs External Factors

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Abstract. To know in general the conditions of the foreign exchange market in Indonesia, it is necessary to analyze how much pressure occurs in the foreign exchange market and what factors influence the pressure the most. Understanding the role of domestic and external factors in determining the exchange market pressure have been understudied in recent years. This paper aims to analyzing the degree to which domestic factors (foreign exchange rate, domestic credit, interest rate differential, etc) and external global factors (global liquidity, U.S. monetary policy, and commodity prices) have affected exchange market pressure in Indonesia. With the results of this study, the government and also the monetary authority can make more appropriate policies so as to minimize the occurrence of exchange market pressure in the future. From this research obtained the result that internal factor more affects exchange market pressure than external factor, where the most influential variable is domestic credit.

Keywords: Exchange Market Pressure, Exchange Rate, Vector Auto Regression, Domestic Credit, International Reserve

1 Introduction

The concept of exchange market pressure was first proposed by Girton and Roper in 1977 [1]. The notion is EMP measures the total pressure on an exchange rate, which has been resisted through foreign exchange intervention or relieved through exchange rate change. The problem is that measuring EMP requires combining the observed change in the exchange rate, which is a percentage change, with an observed intervention which is measured in dollars. The early efforts in measuring EMP worked directly using monetary models, whereas more recent efforts have focussed on measuring EMP using indices that combine changes in reserves and the exchange rate. The direct measures of EMP are model dependent and primarily geared towards finding the magnitude of money market disequilibrium that must be removed either through reserve or exchange rate changes under any desired exchange rate target. EMP indices meanwhile, are designed to capture and forecast crises. Direct measures often lack consistent units, whilst indices do not have this problem and are better suited to crisis conditions.

Exchange Market Pressure (EMP) can be defined as the intervention of the monetary authority in the exchange rate which can be seen by analyzing changes in the exchange rate and foreign exchange reserves. According to Desai et al, EMP is the sum of the values for depreciation and reserves for outflows (scaled with primary money), summarizing the excess cash flow in the managed exchange rate policy [2].

Oruc mentions three factors that determine a country to be more vulnerable to financial crises, one of which is the high appreciation of the real exchange rate. Another factor that can determine a country more likely to experience a financial crisis is a weak banking sector and low reserves. When a financial crisis occurs, countries that have abundant foreign exchange reserves or strong fundamentals (no real exchange rate that is too high and a strong banking system) will only experience a decline in capital inflows. Conversely, a country with weak fundamentals and limited reserves relative to short-term liabilities will be vulnerable to investor panic [3].

The financial crisis that occurs can create obstacles in inter-country transactions such as disruptions in the inter-country export and import activities. Obstacles in international transactions can indirectly cause the value of domestic currency exchanges to be stressed so that often there is a large fluctuation of money in the foreign exchange market [4]. The existence of economic problems at the international level will also place an even greater emphasis on the value of domestic currency exchange against foreign currency. Very high pressure can result in the value of the domestic currency exchange to either depreciating or appreciating excessively so that it disturbs the country's random domestic economic discipline. In order to control the movement of the excess exchange rate, the monetary authorities will exercise cash interventions in the foreign exchange market in the hope that domestic currency will become stable [5].

Before the 1997/1998 Asian financial crisis, Indonesia adhered to a fixed exchange rate regime, then after the crisis shifted to a controlled floating exchange rate regime, and now is a free floating exchange rate system. This large change in the Indonesian exchange rate system has consequences for the volatility of the rupiah exchange rate against the US dollar [6]. Exchange market pressure can be interpreted as disequilibrium in the money market that arises due to the excess money supply relative to demand, so that the currency depreciates and makes foreign exchange reserves decrease. Indonesia as a developing country is quite vulnerable to face pressure on the foreign exchange market due to the turmoil that occurred in the international world. To prevent excessive fluctuations, it is necessary to know the main sources of pressure in the Indonesian foreign exchange market, so that in the future Indonesia can mitigate the risks that might arise from the Exchange market pressure [7].

2 Literature Review

- Falianty and Andhony analyzed Exchange Market Pressure and Bank Indonesia Intervention using the double stage least squares method. The data used are monthly data for the period 2007-2010 to obtain the EMP index and the central bank intervention index. The results showed that the maximum pressure of appreciation and depression occurred in the 2008/2009 period. In addition, the index of central bank intervention on foreign exchange markets is very high. This shows that by way of fact, Indonesia does not adhere to the free floating exchange rate and on a regular basis Indonesia has adopted the free floating regime since August 1997 [6].
- Kyin et al, analyzed Monetary Policy and Exchange Market Pressure in Malaysia using the VAR method. Aiming to get a more complete picture of Malaysia's condition and to examine how Bank Negara handles different foreign exchange market pressures, this study considers Malaysia's exchange rate in relation to its two main trading partners namely Japan (RM / YEN exchange rate) and the United States (RM exchange rate) / USD) to build an EMP model. Study period 1990: 1 to

2008: 9 and the sample period is further divided by crisis period and Malaysia's experience using different exchange rate regimes. The results of this study indicate that the traditional theoretical prescriptions are not followed by Malaysia and that the State Bank should implement a different monetary policy with a different EMP model only under a crisis and a fixed exchange rate regime [8].

- Aziz and Widodo analyzed Exchange Market Pressure: Evidences from ASEAN Inflation Targeting Countries for the period 2006Q1-2016Q4. The results show that all variables conform to the theory implied, except for changes in real income for Indonesia and Thailand, and changes in world prices for the Philippines. Thus, additional pressure from the financial crisis was found only in the Indonesian rupiah and the Thai baht exchange rate. This research also proves that the independent variable, which is used, can try to predict the advantage of the EMP value, especially during the financial crisis. In the context of controlling for the EMP, this study finds that these countries prefer to maintain their currency exchange rates by managing domestic credit and interest rates [9].

3 Method

Girton and Roper (1977) assumed that foreign exchange intervention was unsterilised. Thus intervention led to equivalent amounts of changes in base money. Money was assumed to be neutral so that percentage changes in base money led to equivalent changes in prices. The assumption of purchasing power parity meant that percentage changes in domestic prices were essentially equal to exchange rate changes. Under these assumptions, the authors added the percentage changes in reserves and in exchange rates. However, monetary models had low predictive power for changes in exchange rates and the resulting measure of EMP was often misleading.

This study uses time series data, therefore the analytical method used is time series analysis. The test is the use of VAR analysis. There are several testing stages in determining the time series analysis method that will be used before it was finally decided to use VAR analysis. VAR modeling is carried out so that the estimation results obtained precisely illustrate the relationship between changes in internal and external factors with exchange market pressure.

We collect quarterly data on Indonesian countries from 2000 Q1 through 2018 Q3. Data on the foreign exchange rate, international reserves (minus gold), money market rates, population, GDP, CPI inflation, base money, trade balance, domestic credit, domestic stock market indices, portfolio, and FDI flows are obtained from the International Monetary Fund (IMF) and International Financial Statistics (IFS) database. In cases in which the IFS database does not provide data on relevant range and frequency, we utilize national data sources.

4 Result and Discussion

In 2002-2003, Indonesia was faced with an increase in capital inflows which had a role in encouraging the strengthening of the rupiah exchange rate. In mid-2004 changes in monetary policy in the United States caused pressure on the rupiah exchange rate as a result of excessive expectations. At that time, the depreciation of the rupiah exchange rate began to strengthen with the reversal of short-term foreign capital flows. In the year of 2007 where the subprime mortgage crisis happens, it

seems that the pressure on the market Indonesia's foreign exchange is relatively high. However, there hasn't been any shock at foreign exchange market. This shows condition of the foreign exchange market during in 2007 it was still relatively stable though there is turmoil in the international world. Using a VAR Analysis, we find that external factors (such as market risk appetite, market liquidity, and U.S. monetary policy actions) not play a significant role in driving the exchange market pressure in Indonesia countries, with a little impact on the latter. Based on the VAR estimation results, with a confidence level of 90 percent, the significant slope coefficient for changes in exchange rate market pressure (EMP) is changes in exchange rate market pressure on 1, 3, 5, 8, 10, and 12 lags. In addition, changes in exchange rate market pressure (EMP) also changed by changes in domestic credit in lag 4. Based on the partial test results, the variable coefficient of exchange market changes pressure on lags and changes in domestic credit have a positive effect on changes in EMP. Positive influence shows pressure on the foreign exchange market responded by monetary authority with domestic monetary credit, but was responded to in the sixth month before the pressure occurs. This policy uses credit domestic pressure occurs on the EMP. The adjusted coefficient of determination value that is equal to 74.15 percent of the variation in EMP changes can be changed by changes EMP on lag, domestic, and interest rate differential. Based on the decomposition of variance in changes in domestic credit, the error variance in the error variable on the first lag was responded to by 40.77 percent by itself. The composition of the contribution of EMP changes is the most dominant for changes in domestic credit.

5 Conclusion

From this research obtained the result that internal factor more affects exchange market pressure than external factor, where the most influential variable is domestic credit. The EMP index shows how pressure of appreciation and depreciation can be reduced through changes in international reserves. Changes in international reserves that are appropriate to use in this analysis are international reserves after being converted in rupiah.

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